

REMARKS

Initially, Applicants wish to call the attention of the Examiner to an error in the Office Action Summary of 06/03/2009. Under the Disposition of Claims box 4, the Examiner has indicated that claims 2, 4-11, 13-16, 26 and 27 are pending. This is incorrect. The pending claims are actually claims 2, 4-11, 13-16 and 18-28. Although claims 18-25 and 28 have been withdrawn from consideration as drawn to a non-elected invention (box 4a), these claims are nevertheless still pending.

Correction of the Office Action Summary is respectfully requested.

This application pertains to a novel separation module.

Claims 2, 4- 11, 13-16 and 18-28 are pending, although claims 18-25 and 28 have been withdrawn from consideration as drawn to non-elected subject matter.

Applicants respectfully request that the non-elected subject matter be rejoined with the elected subject-matter upon allowance of elected subject-matter.

In response to the previous office action, dated December 11, 2008, Applicants amended the claims to recite that the film strips are staggered ceramic film strips.

In the current office action claims 4-5, 8-11 and 26-27 stand rejected under 35 U.S.C. 103(a) as obvious over Kalthod US 5,779,897 in view of McGinnis US 3,690,465

and further in view of Garcera US 4,640,774.

The Examiner views Kalthod as disclosing a fluid separation module comprising at least one bundle of ceramic capillaries, wherein the capillaries have an internal diameter within the range of Applicants' invention according as defined in claim 27. The examiner acknowledges that Kalthod fails to disclose the establishment of a distance between the capillaries by attaching staggered ceramic film strips to the capillaries while the capillaries are parallel, winding the capillaries into a bundle and joining the ending of the bundle of capillaries in an end plate and failing to teach that the film strips define a distance between the individual capillaries in the bundle and also forming baffle plates within the bundle.

The Examiner views McGinnis as teaching capillaries laid side by side in a spaced apart relationship, wound into a bundle and joined at the ending of the bundle in end plates. The Examiner further contends that the method of fabrication as disclosed by the McGinnis reference is conventionally known in the art.

As a result to the foregoing and further taking into account that the Kalthod reference further teaches introducing the filaments into a filament winding machine and then into a mandrel as it is rotated, the Examiner concludes that the combination of the Kalthod and the McGinnis references would result in a proper alignment of the filaments.

The Examiner further turns to the disclosure of Garcera for finding that a

separation module comprising a tape of a ceramic paste for holding “filter members” which are obviously viewed as the ceramic capillaries of Applicants’ invention was known in the art at the time Applicants made their invention.

Thus the Examiner combines the disclosure of the Kalthod, McGinnis and the Garcera reference for concluding that the entire invention of the Applicants is rendered obvious.

The foregoing argumentation of the Examiner misses several important points, however.

First, as pointed out in response to the office action dated 05/28/2008, the automated fabrication method disclosed by McGinnis (col. 14, lines 12-15 and Figs. 1-3) is a method that uses the apparatus disclosed in Fig. 1, which winds endless filaments (14) around a web (31) (see also col. 14, lines 40-42). As the filaments according to the McGinnis reference are “endless” the limitation of a “plurality” of the ceramic capillaries being wound into a bundle as in Applicants’ invention can not be met by the McGinnis reference.

The possible fabrication method according to the Kalthod reference, disclosing the use of a “mandrel” may involve use of a “group of fibers” (see col. 5, lines 16-20) is a method of unwinding and therefore not comparable to the McGinnis method, however the methods share one essential feature involved.

The McGinnis reference requires the filaments to be kept under a certain elongation tension by means of brake (66a) and guide (70) to ensure winding without wrapping of the filaments (see col. 13, lines 1-30 and Fig. 4). Same applies to the Kalthod reference, which requires using a “mandrel and pulley guides” to keep the fibers under “tension” (col. 5, lines 6-10 of the Kalthod reference).

If one were to apply any of said methods to ceramic capillaries, such winding under tension would certainly result in immediate breakage of said ceramic capillaries.

These methods of producing a capillary bundle are simply distinct from Applicants' invention. Both disclosures, the Kalthod reference as well as the McGinnis reference, involve intense bending and tensioning of the capillaries perpendicular to and along the axis of each and every capillary, which – in contrast thereto – is not involved in Applicants' fabrication of the bundle.

Applicants bundle is formed by winding the capillaries pressed at least partially into the staggered film strips around these film strips, which – in contrast to the capillaries – are not hollow, are thicker and thus can be wound. Hence the winding of the capillaries of Applicants invention does not take place within the capillary itself, but within the film strips involved. Thus there is no bending and tensioning of the capillaries perpendicular to and along the axis of each and every capillary, resulting in breakage of these ceramic capillaries.

The later winding around the “foraminous material” according to the McGinnis

reference (see Fig. 8) is not separately applicable to the teaching of the Kalthod reference, as it necessarily involves the use of the entire apparatus, requiring said bending (see also Fig. 8). In addition, the disclosure of the Kalthod reference further teaches that an apparatus analogous to the McGinnis reference shall be used, by further disclosing preferred use of “traversing guides” (see col. 5, lines 10-11), as depicted for instance in Fig. 8 of the McGinnis reference. Thus both references teach to employ an apparatus that involves bending and or stretching of the capillaries.

However, ceramic capillaries can not be wound by 180° as disclosed by McGinnis (see col. 12, lines 62-67 and col. 14 lines 24-26).

Therefore the McGinnis teaching applies only to the disclosed polymeric materials to be used in his method (See Table 1 and col. 5 lines 58-67 of the McGinnis reference), which likewise applies to the teaching of the Kalthod reference in col. 5, lines 6-19.

Accordingly, it might be that the method according to the McGinnis reference is conventionally known in the art, but, if it were, those of ordinary skill in the art would inherently be taught to use any of the foregoing “winding machines” and thus would never be able to arrive at Applicants’ invention, even if the later Garcera reference would teach staggered ceramic film strips according to Applicants’ invention and if that teaching would be applicable to the combined teaching to the Kalthod and McGinnis teachings, which – in fact, as shown later – is not the case.

In Applicants novel separation module, the staggered ceramic strips *inter alia* perform the function of baffles which result in forced flow (page 11, lines 1-4). Thus the "shell side", fluid can flow between and around the individual capillaries.

By contrast, McGinnis does not teach the use of film strips to permit the shell side fluid to flow between and around the individual capillaries. McGinnis teaches layers of hollow filaments separated by a thin layer of foraminous material. Thus a shell-side fluid cannot easily flow between the capillaries of adjacent layers of capillaries, because the layer of foraminous material would disrupt the flow.

The production method according to the McGinnis reference requires use of a contiguous material, which is permeable and which can be bended and folded at its sides (see Figs. 4 and 5). However, ceramic film strips are not contiguous and thus can not simply replace the foraminous material according to the McGinnis reference without putting the method out of practicability.

The Garcera reference teaches use of tapes of ceramic paste; however these are employed for the connection of the filter members with the gasket (see col. 7, lines 13-17) and not for interconnecting the filter members as to Applicants invention. Particularly these tapes of ceramic paste can not act as baffle plates, as they are situated inside the gasket (9) (see Fig. 6).

Accordingly, the Garcera reference cannot be combined with the teachings of the Kalthod and the McGinnis references, but even if it would be possible to combine them,

the combination of the three teachings would not in any way render Applicants' invention obvious, as it's impossible for one of ordinary skill to have staggered film strips functioning as baffle plates introduced.

Thus, the combination of these references could never arrive at the separation module defined by Applicants' claim 27 and those claims depending from that claim.

Accordingly, Applicants' claims cannot be seen as obvious over the Kalthod/McGinnis/Garcera combination of references, and the rejection of claims 4-5, 8-11 and 26-27 under 35 U.S.C. 103(a) as obvious over Kalthod US 5,779,897 in view of McGinnis US 3,690,465 and further in view of Garcera US 4,640,774 should now be withdrawn.

Claims 2, 6, 7 and 12 stand rejected under 35 U.S.C. 103(a) as obvious over Kalthod US 5,779,897 in view of McGinnis US 3,690,465 and further in view of Garcera US 4,640,774 as applied to claim 5 above and further in view of Taketomo US 4,671,809.

The differences between Applicants' claims and anything that can be derived from the Kalthod/McGinnis/Garcera combination of references have been discussed above. The Examiner relies on Taketomo for distances less than 3 mm and an end plate. No defined distances or end plates could possibly overcome the differences pointed out above between the module defined by Applicants' claims and anything that could be derived from the Kalthod/McGinnis/Garcera combination of references.

The rejection of claims 2, 6, 7 and 12 under 35 U.S.C. 103(a) as obvious over Kalthod US 5,779,897 in view of McGinnis US 3,690,465 and further in view of Garcera US 4,640,774 as applied to claim 5 above and further in view of Taketomo US 4,671,809 should therefore now be withdrawn.

Claims 13 and 14 stand rejected under 35 U.S.C. 103(a) as obvious over Kalthod US 5,779,897 in view of McGinnis US 3,690,465 and further in view of Garcera US 4,640,774 as applied to claim 27 above and further in view of Shay US 4,310,607.

The differences between Applicants' claims and anything that can be derived from the Kalthod/McGinnis/Garcera combination of references have been discussed above.

The Examiner relies on Shay for stainless steel housing. No stainless steel housing could possibly overcome the differences pointed out between the module defined by Applicants claims and anything that could be derived from the Kalthod/McGinnis/Garcera combination of references.

The rejection of claims 13 and 14 under 35 U.S.C. 103(a) as obvious over Kalthod US 5,779,897 in view of McGinnis US 3,690,465 and further in view of Garcera US 4,640,774 as applied to claim 27 above and further in view of Shay US 4,310,607 should therefore now be withdrawn.

Claim 15 stands rejected under 35 U.S.C. 103(a) as obvious over Kalthod US

5,779,897 in view of McGinnis US 3,690,465 and further in view of Garcera US 4,640,774 as applied to claim 27 above and further in view of Bellhouse US 6,217,764.

The differences between Applicants' claims and anything that can be derived from the Kalthod/McGinnis/Garcera combination of references have been discussed above.

The Examiner relies on Bellhouse for a ceramic housing. No ceramic housing could possibly overcome the differences pointed out above between the module defined by Applicants claims and anything that could be derived from the Kalthod/McGinnis/Garcera combination of references.

The rejection of claim 15 under 35 U.S.C. 103(a) as obvious over Kalthod US 5,779,897 in view of McGinnis US 3,690,465 and further in view of Garcera US 4,640,774 as applied to claim 27 above and further in view of Bellhouse US 6,217,764 should therefore now be withdrawn.

Claim 16 stands rejected under 35 U.S.C. 103(a) as obvious over Kalthod US 5,779,897 in view of McGinnis US 3,690,465 and further in view of Garcera US 4,640,774 as applied to claim 27 above and further in view of Dobo US 4,268,278.

The differences between Applicants' claims and anything that can be derived from the Kalthod/McGinnis/Prasad combination of references have been discussed above.

The Examiner relies on Dobo for a separation module comprising a catalyst. The inclusion of a catalyst in the device of the Kalthod/McGinnis/Garcera combination of references could not possibly overcome the differences pointed out above between the module defined by Applicants claims and anything that could be derived from the Kalthod/McGinnis/Garcera combination of references.

The rejection of claim 16 under 35 U.S.C. 103(a) as obvious over Kalthod US 5,779,897 in view of McGinnis US 3,690,465 and further in view of Garcera US 4,640,774 as applied to claim 27 above and further in view of Dobo US 4,268,278 should therefore now be withdrawn.

In view of the present amendments and remarks it is believed that claims 2, 4-11, 13-16 and 18-28 are now in condition for allowance. Reconsideration of said claims by the Examiner is respectfully requested and the allowance thereof is courteously solicited.

CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this amendment is required, applicants request that this be considered a petition therefore. Please charge the required petition fee to Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fee or credit any excess to Deposit
Account No. 14-1263.

Respectfully submitted,
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